

# **Enhanced system for the visually challenged through Currency Recognition Technologies**

## **Abstract:**

In recent years, technologies and support for people with visually impaired disabilities have increased. This system helps the visually impaired people to recognize the different denominations of Indian Currencies with the basic concept being the usage of Deep Learning Algorithm. The model is based on image recognition from a database of objects. The currency note is captured through a camera which is then given to a Machine Learning model. The model is based on convolution neural network which helps in image processing and classification. There are other types of neural networks in deep learning, but for identifying and recognizing objects, CNN's network architecture is of choice. Various layers like convolutional layer, pooling layer and fully connected layer are used for feature extraction of the input image and finally, classification of the input image is done. Finally, the results are communicated to the user by system audio feedback.

## **Existing System:**

Indian banknotes contain several features which enable the visually impaired to identify them.

- intaglio printing and tactile mark
- variable banknote size
- large numerals
- variable colour
- monochromatic hues and patterns.

The identification of currency notes by the visually challenged people are done by manually. There is no automatic recognition systems existed till now for identifying the denomination of the currency.

## **Dataset used:**

Dataset have been taken from Kaggle -

<https://www.kaggle.com/datasets/apoorvshekher/indian-currency-dataset>

## Proposed Solution:

- The objective of the project is to develop a currency recognition system that can detect Indian currency notes. It includes image pre-processing and image recognition. We are using **VGG16 architecture** from convolution neural network for Image Detection and Processing.
- For training the model we are using a data set of Indian currency notes. Audio feedback is provided which conveys the results of the currency recognition system to the users. Our model has four major steps:
  - I. Dataset Acquisition
  - II. Image Processing
  - III. Image Classification
  - IV. Audio Output

## Result Screenshots:

<pre>28 prediction('./captured_image.jpg')</pre>  <pre>1/1 [=====] - 0s 111ms/step 1/1 [=====] - 0s 20ms/step Predicted denomination is twenty</pre>	<pre>27 capture_image() 28 prediction('./captured_image.jpg')</pre>  <pre>1/1 [=====] - 0s 104ms/step 1/1 [=====] - 0s 18ms/step Predicted denomination is hundred</pre>
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